

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
16 September 2004 (16.09.2004)

PCT

(10) International Publication Number  
**WO 2004/078983 A3**

- (51) International Patent Classification<sup>7</sup>: C12N 15/82, 15/29, 15/63
- (21) International Application Number: PCT/EP2004/002096
- (22) International Filing Date: 3 March 2004 (03.03.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
03005181.7 7 March 2003 (07.03.2003) EP
- (71) Applicant (for all designated States except US): BASF PLANT SCIENCE GMBH [DE/DE]; 67056 Ludwigshafen (DE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): HOFVANDER, Per [SE/SE]; Doppinggränd 8, S-239 41 Falsterbo (SE). ANDERSSON, Mariette [SE/SE]; Pilegatan 20, S-222 29 Lund (SE).
- (74) Agent: PRESSLER, Uwe; BASF Aktiengesellschaft, 67056 Ludwigshafen (DE).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report
- (88) Date of publication of the international search report:  
13 January 2005
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ENHANCED AMYLOSE PRODUCTION IN PLANTS

(57) Abstract: The invention relates to methods for increasing the amylose content in plants, preferably in potato plants, by expressing a starch biosynthesis enhancing protein. The invention furthermore relates to an expression cassette expressing the polypeptide in potato plants, preferably in the tubers, the transgenic plants expressing the polypeptide and to the use of said transgenic plants for the production of fine chemicals especially other than native starches.

WO 2004/078983 A3

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/2004/002096

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/82 C12N15/29 C12N15/63

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, WPI Data, PAJ, BIOSIS, EMBASE, Sequence Search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/014365 A (GEMSTAR CAMBRIDGE LTD) 20 February 2003 (2003-02-20)  SEQ ID NO:24 This document refers to invention 1 and 2 page 36, paragraph 4 - page 43, paragraph 2; examples 9,18-20	1-7, 9-11, 16-19, 22-27
X	WO 94/04693 A (ZENECA LTD.) 3 March 1994 (1994-03-03)  This document refers to invention 1 and 2 page 3, line 34 - page 6, line 8  ----- -/--	1-7, 9-11, 16-19, 22-27

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

26 July 2004

Date of mailing of the international search report

11.10.2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Schönwasser, D

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/2004/002096

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>           DATABASE SWALL [Online]            1 March 2002 (2002-03-01),            YAMADA K. ET AL.: "Putative glycogenin            protein"            XP002250691            Database accession no. Q8VZP6            abstract            -----         </p>	14

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2004/002096

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1-7, 9-11, 16-27 (partially); 12, 14 (completely)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7,9-11,16-27 (partially); 12,14 (completely)

A method of increasing the production of starch, a method of producing amylose type starch; nucleic acid sequence SEQ ID NO:1, amino acid sequence SEQ ID NO:2; a transgenic expression cassette, a transgenic host cell and transgenic plants

---

2. claims: 1-7,9-11,16-27 (partially); 13,15 (completely)

A method of increasing the production of starch, a method of producing amylose type starch; nucleic acid sequence SEQ ID NO:3, amino acid sequence SEQ ID NO:4; a transgenic expression cassette, a transgenic host cell and transgenic plants

---

3. claims: 1-3, 9-11 (partially); 8 (completely)

A method of increasing the production of starch and a method of producing amylose type starch

---

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/2004/002096

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 03014365	A	20-02-2003	CA 2455200 A1	20-02-2003
			EP 1417322 A2	12-05-2004
			WO 03014365 A2	20-02-2003
			US 2003200564 A1	23-10-2003
-----				
WO 9404693	A	03-03-1994	AU 685065 B2	15-01-1998
			AU 4970793 A	15-03-1994
			CA 2143316 A1	03-03-1994
			EP 0658208 A1	21-06-1995
			WO 9404693 A2	03-03-1994
			US 5859333 A	12-01-1999
-----				